

REMARKS

The Examiner is thanked for the thorough review and consideration of the present application. The final Office Action dated December 12, 2003 has been received and its contents carefully reviewed.

By this Response, Applicants have amended claims 1, 4-7, 10, 13-15, 20-22 and 29, and cancelled claim 3 without prejudice or disclaimer of the subject matter recited therein. Reconsideration and withdrawal of the rejections in view of the above amendments and the following remarks are requested.

In the Office Action, claims 1, 3, 6-10, 15-18, 22, 26-30 and 35-36 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,978,061, issued to Miyazaki et al. (hereafter "Miyazaki"). Applicants have cancelled claim 3 without prejudice. Thus, the rejection, as applied to cancelled claim 3 is rendered moot. Applicants traverse the rejection because Miyazaki fails to teach or suggest each of the features recited in the claims of the present application. For example, Miyazaki fails to teach or suggest a method for fabricating a liquid crystal display (LCD) that includes, among other features:

"radiating light on the oriented films on the first substrate and on the second substrate to orient the films and to bond the first substrate and second substrate together", as recited in independent claim 1;

"radiating light on the first oriented film and on the second oriented film to orient the first and second films and to bond the first substrate and the second substrate together", as recited in independent claim 10; and

"radiating light on the oriented films to orient the films and to bond the first substrate and the second substrate together", as recited in independent claim 15.

Miyazaki further fails to teach or suggest a liquid crystal display in which:

"a radiating light on the contacting alignment films orients and bonds the first substrate and the second substrate together", as recited in independent claim 22; and

"the first alignment film contacts the second alignment film such that a radiating light on the contacting films orients and bonds the first substrate and the second substrate bonded together", as recited in independent claim 29.

Miyazaki discloses “a liquid crystal display capable of preventing a disorder in orientation that is caused in a rubbing process upon an introduction of a pillar-shaped spacer” (col. 3, lines 20-23). In FIGS. 9 and 10 of Miyazaki, “the rubbing process is conducted, thereby forming the orientation film 21” (col. 10, lines 44-46). And, “the orientation film 35 is deposited by executing the rubbing process, thus completing the opposite substrate 30. After this processing, the sealing material is printed on the side of the opposite substrate 30, and the active matrix substrate 10 and the opposite substrate 30 are disposed to make a angle of 90° in their orientation directions. Then, the sealing material 37 is hardened by heating, those substrates are bonded, and the liquid crystal 40 permeates therebetween, thus obtaining a desired liquid crystal display device” (col. 11, lines 20-31, emphasis added). Applicants submit Miyazaki includes a rubbing process for orientation and a heating process for bonding. In contrast, in the claims of the present application, there is no rubbing process. Instead, radiating light is used “to orient and bond” the first and second substrates together. Additionally, Applicants note in Miyazaki, the orientation process, hardening of the sealing material and bonding of the substrates are completed in separate steps.

Based upon the above, Miyazaki fails to teach or suggest “radiating light on the oriented films on the first substrate and on the second substrate to orient the films and to bond the first substrate and the second substrate together”, as recited in claim 1; “radiating light on the first oriented film and on the second oriented film to orient the first and second films and to bond the first substrate and the second substrate together” as recited in claim 10; “radiating light on the oriented films to orient the films and to bond the first substrate and the second substrate together”, as recited in claim 15; “wherein a radiating light on the contacting alignment films orients and bonds the first substrate and the second substrate together”, as recited in claim 22; and “wherein the first alignment film contacts the second alignment film such that a radiating light on the contacting films orients and bonds the first substrate and the second substrate together” as recited in claim 29. Because Miyazaki fails to teach or suggest at least these recited features of independent claims 1, 10, 15, 22 and 29, rejected claims 1, 3, 6-10, 15-18, 22, 26-30 and 35-36 are allowable over Miyazaki. Reconsideration and withdrawal of the rejection are requested.

In the Office Action, dependent claims 2, 12, 23 and 32 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyazaki in view of U.S. Patent No. 5,808,716, issued to Gass

et al. (hereafter "Gass"). Dependent claims 4, 14, 20, 24 and 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyazaki in view of U.S. Patent No. 4,734,218, issued to Takuma et al. (hereafter "Takuma"). Dependent claims 5, 21, 25 and 34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyazaki in view of U.S. Patent No. 5,724,113, issued to Bryan-Brown et al. (hereafter "Bryan-Brown"). Dependent claims 11, 19 and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Miyazaki in view of U.S. Patent No. 5,729,312, issued to Yamagishi et al. (hereafter "Yamagishi"). Applicants traverse the rejections because neither Miyazaki, Gass, Takuma, Bryan-Brown, nor Yamagishi, analyzed alone or in any combination, teach or suggest the combined features recited in the claims of the present application.

Gass discloses a liquid crystal display that "includes a glass cell wall on which are formed alignment layers... Chemical bonds are formed between the alignment layers and the adjacent liquid crystal layers so that the liquid crystal layers are bonded to the alignment layers in order to increase resistance to mechanical damage" (abstract). Also, Gass includes "alignment layers 5 and 6 comprising a mixture of a reactive compound and a smectic liquid crystal material are deposited" (col. 8, lines 18-20).

Takuma discloses "dichroic dyestuffs suitable for use in liquid crystals and liquid crystal compositions containing the above dyestuffs as well as display devices making use of these compositions" (col. 1, lines 8-11). The dichroic ratios in Takuma were obtained by "dissolving each dichroic dyestuff at a concentration of 1.0 wt.% in a liquid crystal produced by Merck & Co, Inc (trade name L ZLI-1565, ZLI-1840 or E-8) which is a typical nematic liquid crystal, sealing it within glass liquid crystal cell having a gap of 10 μ m which had beforehand been treated so as to ensure homogeneous orientation, placing the resultant liquid crystal cell in the light path of a spectrophotometer, applying linearly polarized light parallel to the alignment of the liquid crystal to measure the absorbance ($A_{||}$) linearly polarized light perpendicular to the arrangement of the liquid crystal to measure the absorbance (A_{\perp})" (col. 11, line 56 - col. 12, lines 4).

Bryan-Brown discloses "a liquid crystal device having an aligned and surface tilted liquid crystal layer contained between two cell walls" and "includes material capable of aligning liquid crystal molecules after cross linking with polarized light" (abstract).

Yamagishi discloses a liquid crystal display device having “a pair of substrates disposed so as to be opposed to each other; and a display medium interposed between the pair of substrates, the display medium having liquid crystal regions comprising one or a plurality of pixels, and the liquid crystal regions being surrounded by polymer walls, wherein a number of substrate gap control materials which are disposed in a gap between the pair of substrates is larger in the polymer walls than in the liquid crystal regions” (col. 4, lines 11-20).

However, Applicants respectfully submit Gass, Takuma, Bryan-Brown and Yamagishi, when combined with Miyazaki, fail to provide the combined features recited in the claims of the present application. Specifically, Gass, Takuma, Bryan-Brown, and Yamagishi fail remedy the deficient teachings of Miyazaki discussed above such that Miyazaki, when modified by the teachings of Gass, Takuma, Bryan-Brown, or Yamagishi, would teach or suggest the combined features discussed recited in independent claims 1, 10 15, 22 and 29. As such, independent claim 1 and its dependent claims 2 and 4-9, and independent claim 10 and its dependent claims 11-14, independent claim 15 and its dependent claims 16-21, independent claim 22 and its dependent claims 23-28, and independent claim 29 and its dependent claims 30-36 are patentable over any combination of Miyazaki, Gass, Takuma, Bryan-Brown and Yamagishi. Reconsideration and withdrawal of the rejections are requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. If the Examiner deems that a telephone conversation would further the prosecution of this application, the Examiner is invited to call the undersigned at (202) 496-7500.

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Reply to Office Action dated December 12, 2003

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If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911. A duplicate copy of this sheet is enclosed.

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